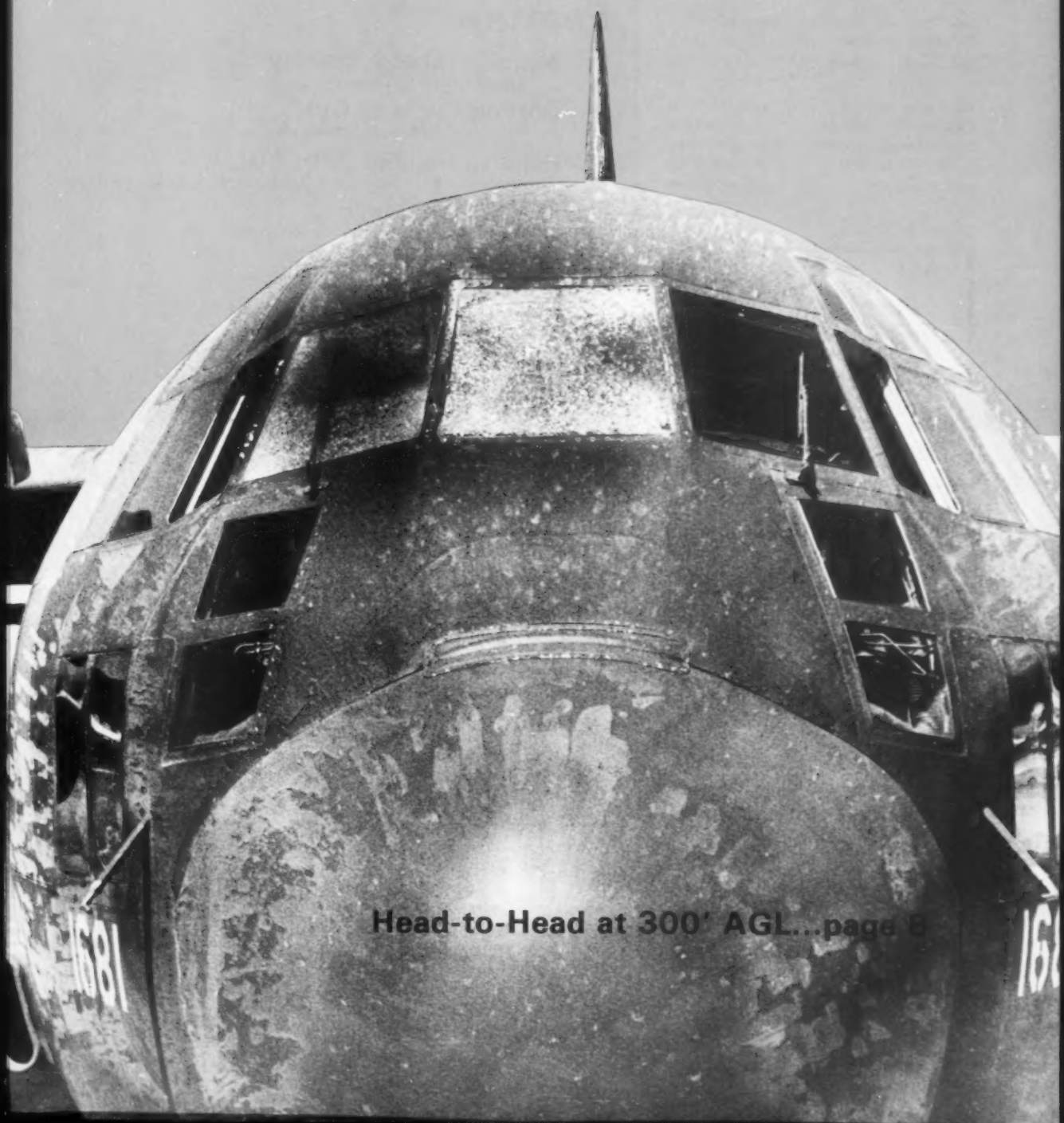
# THE MAC Flyer

OCTOBER 1984



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# THE MAC Flyer

For Greater Safety in MAC Air Operations

OCTOBER 1984 | MACRP 127-5 | VOL XXI NO. 10



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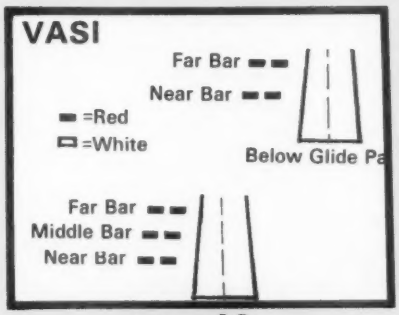


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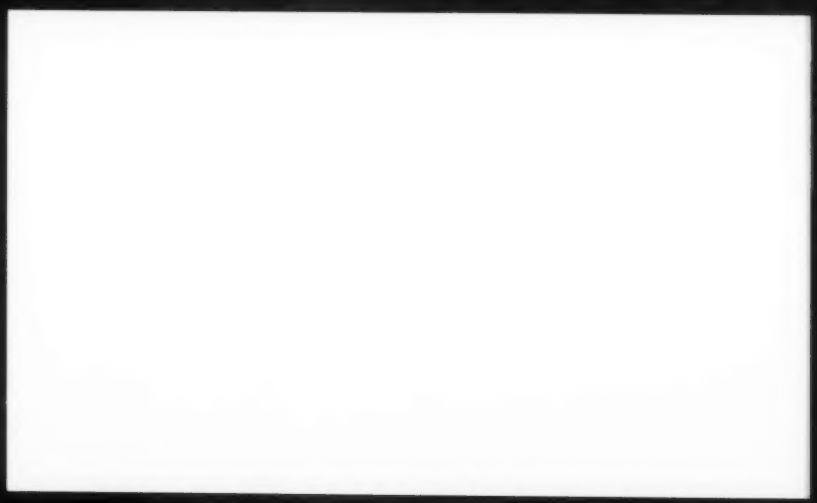


# Murphy Takes a Holiday

**Angels need a vacation, too.**

by Capt. Thomas R. Kogler
50 TAS
Little Rock AFB, Arkansas

Well, if it isn't Angel Murphy, the Aircrew Guardian Angel! It's good to see you back. Where have you been, TDY again?" asked the jovial cherub, Angel Jacobs.

"Afraid so," answered the weary Angel Murphy. "I've been TDY so much, my wings need to be overhauled."

"That's right," said Angel Paul. "A new tech order just came down concerning angels' wings and yours were mentioned. You're going to be grounded for a while."

"That's just as well," replied Angel Murphy. "I need to take some leave. I'm going to lose five days if I don't take some by next month. Is the Archangel in?"

**Honorable Mention Winner**

**1984 MAC Flying Safety Writing Contest**

"Yeah," said Angel Paul, "he wanted to talk to both of us when you came in."

"Angels Murphy and Paul, I'm glad you're both here," bellowed the intimidating Archangel, seeing the two younger angels about that time. "We have a problem. It seems there's a little exercise coming up in Korea soon. Two C-130s are dropping ROKs, single ship, at Alpha DZ. Alpha DZ is in P518 and close to the DMZ, so the 'Big Boss' is putting extra emphasis on this one."

"Sounds pretty routine for my boys," responded Angel Murphy.

"Maybe so," came the Archangel's quick reply, "but from my reports, those aircrews don't need *your* kind of help. It seems they've

"...Matsch just wasn't prepared for anything to go wrong..."

even named you as the cause of their problems. Ever heard of Murphy's Law; if anything can go wrong, it will?"

"That's not fair boss. Those aircrews just aren't aware of what I do for them," said Angel Murphy.

"That's not my problem," replied the Archangel. "As of now, I want you to teach Angel Paul the ropes with this Korean exercise."

"But boss, I was hoping to take some leave," said the dejected angel.

"After you teach Angel Paul."

"Boy, the boss sure was on your case today. Maybe he's just uptight about the upcoming ORI," commented Angel Paul.

"Maybe," said Angel Murphy, his mind elsewhere. "What's really eating me is the crack about 'Murphy's Law.' That's just not the way it is."

"Are you sure you're not just slipping a little," jabbed Angel Paul.

"Let's take a look at the two crews involved in the Korean exercise," said Angel Murphy, ignoring his partner's remark. "I'll show you what I mean. The two aircraft commanders you see are Captains Matsch and Finagle. Captain Matsch is the 'golden boy' of the squadron. Everything he does turns out perfectly. He always has an on-time takeoff, flies his five-hour pilot trainers to the minute, and has straight Q-1s on his checkrides. Listen to him."

"Well, gentlemen, you sure are fortunate to be on my crew," boasted the fair-haired Matsch. "You could have had that jinx, Finagle, as your AC. That Finagle sure has the worst luck. Everything that can go wrong with him, does. He must have Murphy of Murphy's Law as his guardian angel." A laugh came out of his crew. Even Angel Paul couldn't keep a giggle from slipping out. "I feel sorry for that guy," continued Captain Matsch.

"I think we've seen enough of him," interrupted Angel Murphy. "Now, let's take a look at Captain Finagle. He's had more than his fair share of bad situations. He constantly fights to make an on-time takeoff, rarely succeeds, and cuts his five-hour local trainers short. He normally brings his C-130 home with two engines out, usually combined with a gear malfunction. Let's hear what Finagle has to say."

"I know not all of you are pleased to have me as your AC," started Captain Finagle. "I know with my run of bad luck, you think it'll be a miracle if you come back alive. Well, I don't believe in miracles, I *rely* on them. I think that most miracles are man-made. Sure, things can go wrong, and probably will. That just means we've got an edge because we know it's coming. Be prepared for the worst."

"Those are the two crews we're supposed to take care of," said Angel Murphy. "I'll take care of Matsch."

"Oh, no you don't," said Angel Paul. "You're taking the easy one so you can take leave earlier."

"No I'm not," said Angel Murphy. "I think Matsch is the tougher case, but if you really want him, I'll take Matsch."

"That's the way I want it," replied Angel Paul.

"Okay," said Angel Murphy, "but Finagle goes first so I can take leave right away."

Captain Finagle was the first to go, much to the surprise of the two crews. Everyone thought that Matsch would be the first to

"To err is human, but to blame it on someone else is even more human."

blaze the trail. Korea, the land of the morning calm, lived up to its name by leaving dense fog patches scattered around the rugged mountain tops; a pretty sight, as long as you didn't have to fly a low-level route. Finagle departed first with a nervous and apprehensive crew. He surprised everyone with an on-time takeoff, and flew the mission as briefed. He even made a PI.

"I told you so. You should have taken Finagle," gloated Angel Murphy. "I'm off to the Bahamas for leave. Good luck with Captain Matsch, and I'll see you when I get back."

"No problem." said Angel Paul. "I'll have an easy job with Captain Matsch flying."

The crews sat nervously at Kwang-Ju, waiting for Captain Matsch to return. He was two hours late. Army helicopters were searching the planned route. Later that day, the news that everybody feared arrived. Captain Matsch and his crew had gone down. There were no survivors. The investigation would not find the true cause of the crash. Over-confidence lended itself to complacency—deadly when combined with just a little bad luck.

A week later in the heavenly squadron, Angel Murphy returned. "What happened to you?" asked Angel Jacobs. "I thought you were going to come back with a tan?"

"I thought so, too," replied Angel Murphy, "but with my luck, a hurricane drenched the Bahamas all week. I didn't even see the sun."

"I'm glad you're back," said Angel Paul. "I sure got my wings chewed about that fiasco with Matsch. You can have your job back as the Aircrew Guardian Angel. I'll stick with non-flyers from now on. You can't fall off the floor! I still don't understand what went wrong."

"Captain Matsch just wasn't prepared for anything to go wrong," replied Angel Murphy. "Flyers can't let their guard down just because things are going well. Bad luck can always be around the next turn point. Captain Finagle, on the other hand, actually had an advantage because he was waiting for a disaster, not to mention all the experience he gained from his previous problems."

"You sure do get a lot of bad press on earth," said Angel Paul. "You're right in saying that the aircrews don't understand you."

"That's all right with me," said Angel Murphy, "as long as it keeps them on their toes."

"I can understand why they need to have you as a scapegoat," said Angel Jacobs. "To err is human, but to blame it on someone else is even more human."

**ABOUT THE AUTHOR**

Capt. Thomas Kogler is a 1978 graduate of the Air Force Academy. After UPT at Williams AFB, Arizona, he flew C-130s with the 345 TAS, Yokota AB, Japan. Captain Kogler is currently with the 50 TAS, Little Rock AFB, Arkansas.

# Getting the Lead Out

## Helpful hints for otiose crewmembers.

It's a tough day, and you're feeling just a little fatigued. Nothing too bad, just a bit of the sluggishness and loss of vitality that comes from going without exercise for a while—and flying 14 hours into a 16-hour crew duty day. You'd like to perk up, but the idea of another cup of coffee just turns you off—terminal heartburn. Well, have we got a deal for you!

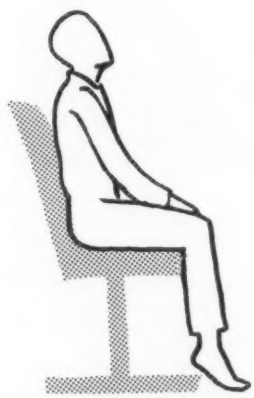
Below are instructions and diagrams for some simple exercises that don't take much time and, best of all, can be done while sitting in your cockpit seat (obviously your size may dictate some discretion as to which ones you choose). The exercises are designed to improve circulation, stretch some muscles, flex joints, and provide some positive stress for your body. Even if you conscientiously do these exercises, you may not be able to compete with Carl Lewis or Bruce Jenner, but you'll feel a lot better and more alert for that "200 and ½" approach coming up.

There is no particular order or grouping to these exercises; obviously, the greater the variety you do, the more overall benefit you'll derive. On the other hand, if you're feeling that a particular problem is building, such as back tension or tight shoulders, you can select the exercises you need to handle that specific problem. It's important, though, that the exercises be done as described.

**Lower Legs and Calves**

*1. Heel and Toe Lift:*

Lean forward slightly with hands on knees. While strongly contracting calf muscles, lift heels as high as possible. Slowly lower heels and then lift toes as high as possible, keeping heels on the floor. Do 10 to 15 complete repetitions.



**Leg Muscles**

*2. Leg Isometrics:*

Cross ankles, with both feet on the floor. Strongly press forward leg backwards against rear leg and vice-versa, but allow no movement. Hold at maximum force for a count of five, then relax. Do three repetitions, then reverse foot position and do three more.

**Torso**

*3. Waistline and Lower Back Flex:*

Hold elbows at shoulder level and slowly twist as far as possible to the right. Slowly return to face forward and continue as far left as possible. Keep going at a medium pace, without holding your breath. Do about 10 to 12 repetitions.

***4. Lower and Upper Back Flex:***

Sit straight up, feet flat on floor. As you exhale, bend forward and touch your feet. Immediately sit up, as you inhale, and pull your arms back at shoulder level, as if you were "rowing" your seat. Hold this position, with your back arched, for just a moment, then repeat the entire motion. Do 15 repetitions at a moderate pace.

***5. Side Stretch:***

Sitting up straight, with hands down alongside your seat and abdomen drawn in, slowly lean to one side (no forward motion allowed) and try to touch the floor. The motion is similar to retrieving something from the bottom of your nav kit, except you should be looking forward. Straighten up, then move to the opposite side. Do about 10 to each side.

**Abdomen**

***6. Abdominal Muscle Trim:***

Sit straight up with your hands on your knees. Exhale as you draw in your abdominal muscles as far as possible; relax, letting out muscles as you inhale. Repeat 15 times at a steady, brisk rate.

**Chest and Upper Arms**

***7. Palm Squeeze:***

Put your hands in your lap, palms facing each other. Without holding your breath, push your hands strongly against each other for a medium count of four. Relax. Repeat 10 to 15 times.

**Head-Neck**

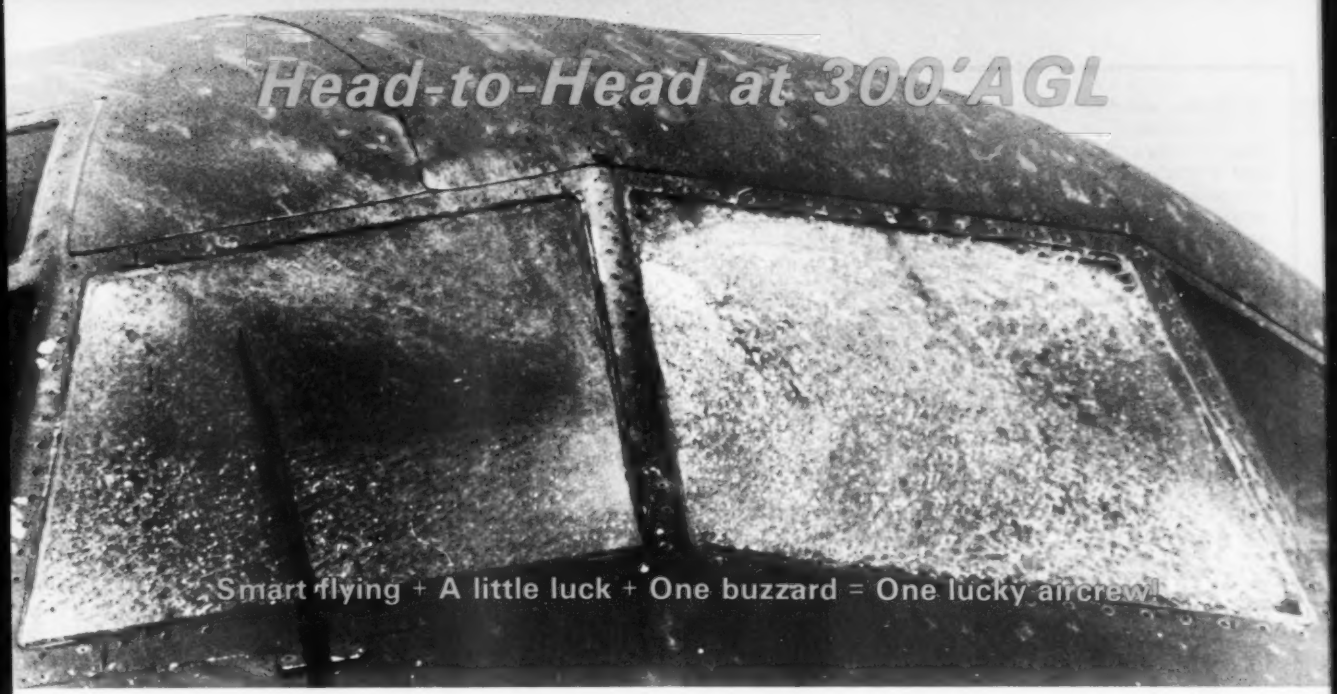
***8. Head Rotations:***

Sit up, hands in lap, relaxed, with your head drooping and chin on your chest. In a slow, relaxed motion, moving only your head, rotate your head around in a large easy circle to the right. After completing one circle, rotate to the left, and so forth, for about six repetitions.

***9. Shoulder Lift:***

Sit erect with hands on upper legs. Inhale, while straightening arms and shrugging shoulders as high as posible. Hold for a moderate count of four, then exhale in a long sigh, letting shoulders droop, head sag with arms bent and relaxed. Stay relaxed for count of four and repeat. Do five repetitions, each time trying to feel the release of tension.

# Head-to-Head at 300' AGL




When you're fighting a mock war on the vast ranges of Nellis AFB, Nevada, you expect some realistic combat simulations. You expect "bad guys" to "jump" you. You expect to see "SAMs" fired at you. But the last thing you expect is a real head-to-head confrontation with a buzzard.

A crew from the 463 TAW's 773 TAS was at Nellis for a typical two-week Red Flag training period this past summer. They had started their deployment on 23 June and were now on their fifth of eight scheduled missions. The date was 2 July, and by now, they were seasoned "veterans" of the Red Flag scenario.

Capt. Mark Ross was in the pilot's seat. He recalled that the day had started much like all the others. "We got up about 0530, and went to the Red Flag building where we had the standard briefings," he said. The mission was to be a four-ship formation of C-130s flying a simulated airdrop resupply to a forward area. "We were to fly out at 10,000 feet to the orbit area, then break off into single-ships for the low-level route."

A minor maintenance problem delayed the crew's departure by about 30 minutes, so they used an alternate route to catch up to the other three aircraft. "We went out at 8,000 feet to Texas Lake, which was about ten minutes away through the alternate corridor, to the descent point where we intercepted the low-level route we had originally planned. We were about three minutes into the low-level portion on the east side of a ridge line at 300 feet AGL when it happened."

Capt. John McCarthy, the aircraft commander, was in the copilot's seat. "I was map reading and the pilot was flying the aircraft," he said, recounting the events of that fateful morning. "We'd just turned right and were using the mountains of the Nellis range to avoid visual or radar detection. We had mountains on the left side of the aircraft, and the pilot was busy looking out in that direction. I'd just identified a road intersection almost dead ahead of the plane and was searching for another checkpoint on the map when I saw the buzzard."

Capt. Kevin Rank was holding down the table-navigator's position that day. "About halfway up the corridor, we realized we were about four minutes ahead of the other three aircraft, so we pulled the power back to slow to 180 knots. Occasionally, I would get up to the window and help in terrain masking and terrain avoidance, but at the time it happened, I was in the right side window, looking

by SSgt. Jimmie Jones
463 TAW Public Affairs
Dyess AFB, Texas

behind the aircraft for our leader. I didn't see the buzzard at all!"

Meanwhile, in the back of the aircraft, a loud "thump" suddenly got the loadmasters' attention. "We'd just finished our combat entry checklist and were standing in the paratroop doors," Sgt. Curtis Massey recalled. "We were close to the mountains and I felt I could reach out and touch them. Then the 'thump.' I thought, oh, boy. Here we go."

Captain McCarthy continued. "It was probably 300 yards away at the time, and at about 200 knots, the closure rate was about 100 to 125 yards per second. I didn't have time to say much. This big, black bird was heading right for us. It looked liked he was looking down, so he didn't see us, either. I started to say something about the bird. Something like 'Watch out for...Oh, _ _ _ _!'"

But Captain McCarthy had been right. At that closure speed, there was nothing either the bird or the aircrew could do to avoid the inevitable. When the bird finally did see the camouflaged airlifter, it made one last desperate move to avoid a collision—it dove slightly before hitting the C-130. "His final move helped us out because he impacted right on the major support structure. His head hit on one side of the beam while his body hit the other side." In all, that center support structure absorbed the brunt of the impact from the bird—a 15 to 20-pound turkey buzzard!

"I saw the wings of the bird flap over the windshield, but before I could say something, it hit," recounted SSgt. Raymond Guerrero. "When it did, I ducked to my left."

When the bird struck the H-model Herk, the force of the impact shattered the windshield into literally millions of small pieces that went everywhere. "The glass came back with a very, very strong force and hit both the engineer and myself," Captain McCarthy said. "It was like someone taking a big flat object and hitting you with it. It almost knocked the engineer out of his seat."

Sergeant Guerrero, a veteran flight engineer with over 3,300 hours, said the glass shattered when he was just starting to move to his left. Consequently, he took most of the impact force on his right shoulder.

"After the bird hit, it started to bleed all over the windshield," Captain McCarthy interjected, "and the blood came squirting right through the cracks. The pile of glass that had hit me in the chest was now between my legs."

Following the strike, Captain Ross' first instinct was to pull up. "I looked over and saw two broken windshields and thought 'We're going home—now!' I made an immediate climbing turn away from the moutains on our left," Ross said. "Then I contacted the AWACS aircraft, declared an emergency and told them we wanted radar vectors directly back to Nellis. I then told the formation we were coming out, we couldn't see anything,

"His head hit on one side of the beam while his body hit the other side."

and that we had just taken a bird strike."

Sergeant Guerrero recalled his actions after the strike. "I saw blood, but at first I thought it was the bird's blood," he said. "I took off my seat belt and stood up to dust myself off. As I did, I reached for the pressurization button, remembering we still had two inches of mercury. Then I remembered I was already depressurizing the aircraft according to our combat entry checklist. So, I went to 'aux vent' which also turns off the air conditioners and gives the pilot more power. Once I saw we were climbing, I went off headset. My face and hair were covered with glass, so I went to the back of the aircraft."

During all of this, the secondary navigator, Capt. Brian Cooper, had been sitting next to the pilot in a self-made seat. "I looked over and saw that the copilot and the engineer were covered with glass. At that point, I turned over all the nav duties to Kevin (Captain Rank, the other nav) and got up to help the copilot and the engineer. The engineer had quickly gotten up and gone to the back. I handed him two cups of water to wash out his eyes. I then remember pulling a piece of glass from the copilot's (Captain McCarthy) cheek."

**"The bird was looking down, so he didn't see us, either."**

Airman Brian Wherle, the secondary loadmaster that day, recalls what it was like from the back. "I heard the thump and a few words came over the interphone, but I don't think we (he and the other loadmaster) realized the severity of the bird strike until we actually went up on the flightdeck and saw what had happened."

"We helped the engineer wash out his eyes," Sergeant Massey recalls, "and just generally made sure he was okay. Fortunately, the flight engineer was wearing sunglasses which helped reduce the severity of the impacting glass fragments.

Throughout the inflight ordeal, each crewmember was concerned with the other's welfare. The loadmasters, for instance, passed the first-aid kit up front, then gave the right-seater a new pair of gloves, his own being embedded with glass.

"Mark (Captain Ross) and I never left our seats," commented Captain McCarthy. "The rest of the guys supplied us with everything. They were picking glass from my neck, hair, face and flightsuit."

But everyone was still concerned about the weakened and shattered windshield. There was the possibility that it could still collapse totally and cause even greater peril to the crew. Realizing this danger, Captain Ross, the pilot, ordered everyone to don their helmets and place the visors down, just in case the windshield did collapse. The glass fragments already inside the cockpit were also causing concern. Some of the pieces had fallen in and around the throttle quadrant, and this could possibly cause the throttles to bind at a critical moment.

Returning to Nellis without pressurization, the crew had to be careful of yet another hazard—hypoxia. "We're trained not to fly above 10,000 feet without pressurization (or supplemental oxygen—*Ed.*)," Captain Rank explained, "so we returned to Nellis at about 8,800 feet—high enough to avoid the mountains, but low enough to avoid the oxygen-thin air of a higher altitude."

"We flew back to Nellis at 190 knots so there wouldn't be as much of an airblast on the windshield," Captain Ross said. "After we landed, we turned off on the center taxiway where all the emergency vehicles were waiting for us."

Amazingly, the injuries to Captain McCarthy and Sergeant Guerrero were only minor ones. The doctors picked several pieces of glass from the captain's back, washed some glass from his eye, and picked two pieces from the inside of his right eyelid. Sergeant Guerrero had just a couple of cuts on his hand.

The crew speculated on the inevitable "what ifs" an incident like theirs brings up. Captain McCarthy realizes the part luck played that day. "That center support beam saved us," he said. "I'm convinced that if the buzzard had struck 12 inches more to the left, it would have probably come through the windshield and killed the engineer. Twelve inches more to the right, and it would have killed me!"

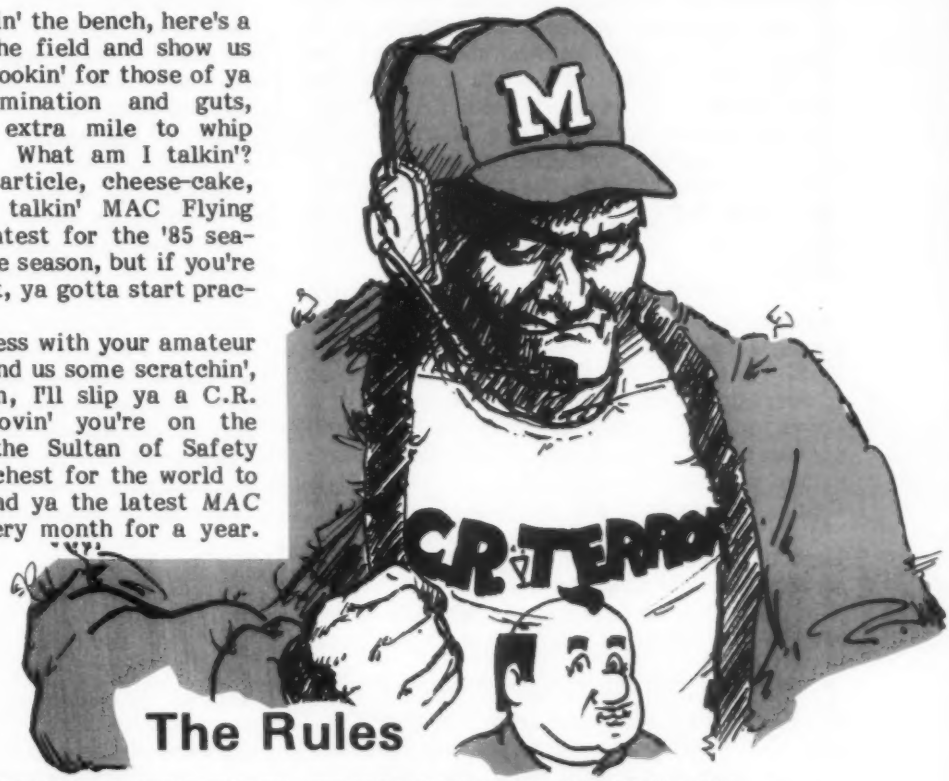
# Get Off the Bench

Are youse guys on the MAC safety team or not? Well, if ya are, ya gotta get out there and win one for the big blue. The opposition is tough. Murphy and his gremlins have a devastatin' ground and air attack! They usually make ya beat yourself! The only way to whip 'um is in the trenches. Every player, from the defensive linemen to the special teams, has got to give 120 percent.

For youse warmin' the bench, here's a chance to get on the field and show us your stuff. We're lookin' for those of ya with drive, determination and guts, willin' to go the extra mile to whip Murphy's Maulers. What am I talkin'? I'm talkin' safety article, cheese-cake, glamor job. I'm talkin' MAC Flying Safety Writing Contest for the '85 season. It's early in the season, but if you're gonna make the cut, ya gotta start practicin' now!

Not tryin' to mess with your amateur status, but if ya send us some scratchin', a story or a poem, I'll slip ya a C.R. Terror T-shirt provin' you're on the team. Imagine the Sultan of Safety plastered on your chest for the world to envy. I'll even send ya the latest *MAC Flyer* playbook every month for a year. All ya gotta do is enter. But remember, the goal is safety, so if you're gonna make the cut, ya gotta keep that in mind and give the team what it needs: a safety or mishap prevention article.

So, put on your pads, get off the bench, trot out there on the field and help the team have another winnin' season. Follow these rules:




## The Rules

**The 1985 MAC Flying Safety Writing Contest is conducted according to MACR 900-3 and these rules. All entries must be original, unpublished and postmarked no later than 31 March 1985. Stories must be between 1,000 and 3,000 words long (about 6 to 14 double-spaced typed pages); poetry should be about 75 to 100 lines. Entries must contain an *aviation safety/mishap prevention message*. Manuscripts must be double-space typed and submitted in two copies. Identify entries by title only and attach a cover sheet showing the author's name, address, duty phone number and unit. Also, the cover sheet should contain a brief autobiography.**

**The contest is open to anyone. Entries qualifying under the above rules earn their author a free C.R. Terror T-shirt (so indicate your size) and a free 1-year subscription to *The MAC Flyer*. However, contest prizes (desk sets and plaques) may only be awarded to military members and civilian employees of the Department of the Air Force or Air Reserve Forces. Other entrants may be selected for Honorable Mention in a Special Category. All winning stories will be published in *The MAC Flyer*. Entries should be addressed to:**

**Safety Writing Contest**
**HQ MAC/IGFE**
**Scott AFB, IL 62225**

# Landing Signals

## If a VASI isn't a VASI, what is it?

Over the past 25 years, many airport operators in the United States who wanted to upgrade a runway with a visual descent path indicator supported by federal funds had only one option: the standard VASI, or Visual Approach Slope Indicator, with which most pilots are familiar. But competitive manufacturing has recently produced such a glut of new approach systems that there is no longer a foregone conclusion about what kind of aid will be installed. In fact, if the installation is to be made with FAA-administered Airport Improvement Program (AIP) funds, the airport management is not able to select a system in advance, but must accept the lowest bid tendered among those systems which have sought and received FAA approval.

This means that pilots who use civilian airports will, more and more frequently, be seeing something different than the familiar VASI. Although the basic principle involved is virtually the same for all systems—use of a given colored light to indicate a given approach angle—there are enough subtle variations involved to warrant a review of the field. The basic VASI consists of two light "bars" aligned perpendicular to the runway. Each bar is made up of one or more boxlike structures containing the light units. If there is only one box in each of two bars, it's called a VASI-2. If there are two boxes in two bars, it's a VASI-4, etc.

The first light bar is usually located about 500 feet down the runway from the threshold, and the second bar is a similar distance farther down. The light units are aligned so the pilot will see white light emitted from the first, or near, bar and red light from the second bar when the aircraft is on the desired glide path. If the aircraft is below the desired glide path (usually more than half a degree), both bars will appear red; if it's too high both will appear white.

At some airports frequented by "high-cockpit" jumbo jets, like the Boeing 747 or the Lockheed C-5, a third light bar is installed in order to provide an alternate descent path, usually about one-quarter of a degree higher. Because the pilot of such an airplane is sitting more than 40 feet above the extended landing gear, his actual descent path could lead to touching down short, if he or she uses the light bars positioned for conventional aircraft. By using the second and third bars for reference the pilot can execute a safer approach. With this type of aid, all other traffic should use the first and second bars only. Airplanes, incidentally are required by regulation to "...maintain an altitude at or above the glide slope until a lower altitude is necessary for a safe landing."

VASIs are often used in conjunction with instrument landing systems, enabling the pilot of an approaching aircraft to continue his electronically established descent path by means of visual reference. The visual range is from three to five miles by day and up to 20 miles at night, depending upon the number of light boxes employed and the meteorological conditions. For VFR approaches only, a "Simplified Abbreviated" VASI (SAVASI) with an optimum range of no more than 1.5 miles is sometimes installed.

Some pilots are taught certain mnemonic sayings in training to help them remember correct interpretation of the VASI lights, such as "Red over white, pilot's all right," and "Red over red, pilot is dead." Pilots may also learn to interpret the pinkish glow sometimes seen at the white bar of an "on course" signal as indication that the aircraft is in the lower segment of the established flight path.

For airports which have not been able to acquire or afford VASIs, some state aviation authorities have supported what is popularly known as the Poor Man's Optical Landing Aid (POMOLA). This system consists of three (usually unlighted) plywood panels, approximately two feet by six feet, raised on poles alongside the runway near the threshold. The panels are so positioned that when the aircraft is on glidepath the pilot sees all three panels in a single line perpendicular to

the runway. If he is below glidepath he sees the center panel as being lower than the other two; if he is above, he sees the center panel as being higher.

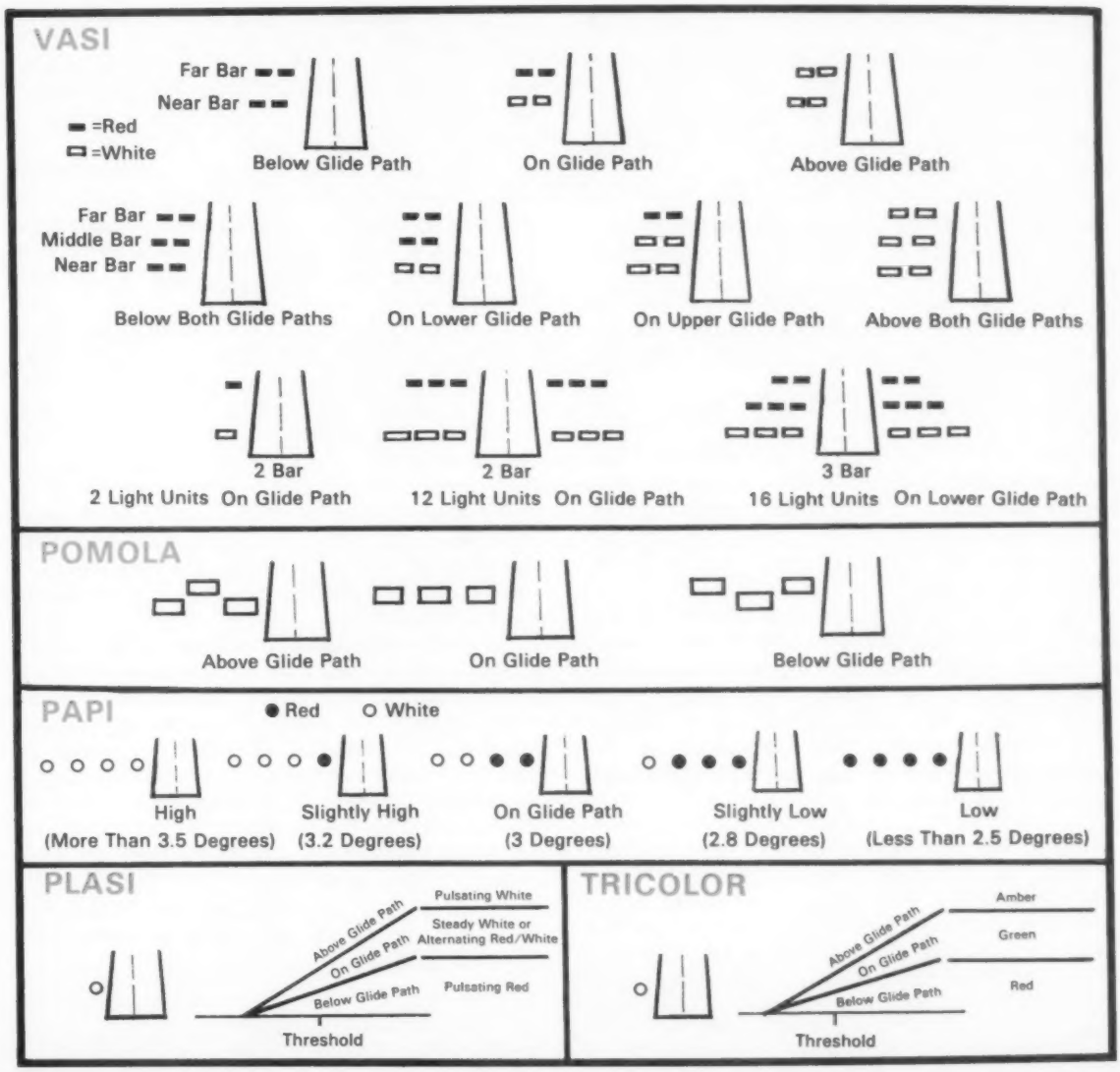
This is an extremely simple, inexpensive system which can be built by amateurs in one day, once the siting locations and panel positions have been worked out. Fluorescent paint or constrasting black and white stripes on the panels provide VFR daytime guidance up to 3/4 of a mile. Some panel systems use rudimentary lights so they can be seen at night.

The usefulness of such a system depends upon the accuracy of the approach angle that's been developed, the background around the panels and other local factors, not the least of which is the need to restore the painted surfaces frequently and to guard against vandalism.

At present there are only two FAA-approved alternatives to the VASI system.

### PAPI

The most serious competitor is a system developed in Great Britain over the past six



years and recently adopted by ICAO as an international standard: the Precision Approach Path Indicator (PAPI). In the United States, it's the only system now being installed at official international airports.

PAPI is based on the same principles as VASI—red and white color differentiation—but it combines all light units in a single horizontal bar, instead of stacking them vertically along the runway. This single bar contains four separate, equally spaced light units which are seen on the same geometric plane by the approaching pilot. Thus the pilot sees all the lights at the same time from the same perspective, not from several different angles. Information input is sharp and quick.

These four lights provide five pieces of information:

(1) Four white lights. Too high—more then 3.5 degrees when the selected descent angle is 3.0 degrees.

(2) Three white lights and one red. Slightly high—up to 0.2 degrees above norm.

(3) Two white and two red. On glide path.

(4) One white and three red. Slightly low—down to 0.2 degrees below norm.

(5) Four red lights. Lower than 0.5 degrees below norm.

The advantages claimed for PAPI, after numerous field trials in the United States and abroad, are (1) a more precise determination the aircraft's position with regard to the ideal glide path; (2) a quicker, easier readout since the pilot looks at only one set of lights; and, (3) the capability of using the lights all the way to touchdown.

So far the only apparent drawback for PAPI is that most pilots in this country have used only VASIs and aren't prepared to deal with something different. However, even those pilots who admitted to some initial confusion at the test sites, said they adjusted quickly and were generally enthusiastic about the new type of signal.

## PLASI

This is Pulsating Light Approach Slope Indicator, which also employs a single light unit with the same two colors, red and white. However, a steady light indicates the aircraft is on the glide path, while a pulsating light shows that it is too high (white) or too low (red).

PLASI offers an effective guidance that is similar to VASI but operates on a reduced range. In VFR weather it is usable up to four miles in the daytime and up to 10 miles at night.

## TRICOLOR

The TRICOLOR is another system which has been used in the past. It looks more like a traffic light than the French national flag since red, green and amber (or yellow) lights are used to provide descent path guidance.

There is nothing complicated about TRICOLOR. If you see green light you're on the glide path; red indicates you're too low and yellow too high. The cost is minimal, but unfortunately so is the effective range. Daytime visibility is only one-half to one mile in VFR conditions, and it is virtually useless in any kind of weather. Nighttime range is about five miles at most. Futhermore, the Airman's Information Manual cautions pilots that, in transitioning between yellow and green, the light signal may be a fuzzy mixture, and a false, confusing yellow light may be seen when moving between the red and the green areas.

The de-standardization of descent path approach aids at airports is bound to cause some initial confusion, but it's possible that manufacturing and design competition will eventually result in some extremely ingenious instrumentation at a manageable cost, so that approach guidance can be offered at many more airports than might have been possible. At any rate, it seems likely that the number of acceptable systems will be stabilized, and perhaps tailored to specific local conditions.

If you are scheduled to land at a civilian or joint use airfield, you might find it worth the expense to call ahead to find out exactly what system, if any, is operating on the runways. It's possible, although not likely, to find a different system at opposite ends of the same runway. Take time to review the system layouts shown in this article. If the traffic pattern turns out to be busy on your arrival, this could save you the embarrassment of an awkward landing. When the colored lights go on, you want to know that they're telling you.

—Reprinted from FAA *General Aviation News*

# Flying-Hour Milestones

MSgt Claude S. Wright, 158 TAS

Lt Col Jerald D. Nelson, 312 MAS
MSgt Norman B. Umpstead, 58 MAS
MSgt LeRoy D. Vesper, 710 MAS

Lt Col Clinton P. Brown, Jr., 337 TAS
Lt Col Peter H. Jackson, 337 TAS
Lt Col James L. Turner, 41 MAS
Maj John R. Bienvenue, 312 MAS
Maj Doyle E. Brady, 58 MAS
Maj Roderick S. Cross, 1402 MAS
Maj John M. Drexler, 312 MAS
Maj Garry W. Dudley, 22 MAS
Maj Lee A. Edson, 731 TAS
Maj Francis Kostival, 193 SOG
Maj William T. Podworny, 337 TAS
Maj Marcel H. Roman, 312 MAS
Maj Chandler H. Sharon, 58 MAS
Maj Ronald N. Speir, 158 TAS
Capt N. Wayne Davidson, 39 TAS
Capt Herman O. Griffin, 145 TAG
Capt Kent R. Groth, 345 TAS
Capt Gordon K. Howard, 337 TAS
Capt Larry K. Nelson, 22 MAS
MSgt Richard P. Carter, 710 MAS
MSgt Richard D. MacGillivary, 15 MAS
MSgt James A. Morning, 9 MAS
MSgt Detlef R. Norton, 710 MAS
MSgt Jesus Noyola, 15 MAS
MSgt Frank M. Robinson, 145 TAG
MSgt Craig L. Sewell, Det 1, 89 MAW
MSgt Lanny R. Tucker, 22 MAS
TSgt Martin H. Bartling, 22 MAS
TSgt Paul W. Buckley, 9 MAS
SSgt Jonnie A. Felder, 58 MAS

Maj Horace P. Hampton, 1551 FTS
Capt Calvin O. Wachs, 1550 FTS
1st Lt Daniel W. O'Sullivan, 1550 FTS
TSgt James I. Arnold, 1550 FTS
TSgt Freddy D. Bishop, Det 18, 40 ARRS
SSgt Larry O. Jenkins, 1550 FTS

Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.

# CRAF Our Partners in Airlift

PAN AM

TWA

So far in our salute to the airlines and aircraft which support the Civil Reserve Air Fleet (CRAF) we've concentrated on cargo aircraft. This month we take our first look at a CRAF aircraft used to transport personnel. Operated by airlines throughout the world, the Lockheed L-1011 TriStar was designed in the late 1960s and made its first flight on 16 November 1970. Less than 18 months later, the first production aircraft entered scheduled airline service. Lockheed built a total of 250 of these tri-engined, widebodied airlifters before the program was phased out in the early 1980s.

The Lockheed TriStar is a major contributor to the passenger arm of the CRAF, performing long-range international flight with two types of aircraft. The first of these, the L-1011-100, will carry approximately 167 combat troops. The L-1011-500, a slightly shorter TriStar with longer range, is capable of carrying 244 combat troops. Currently, Pan Am and TWA commit a total of 28 TriStars to the CRAF, adding the equivalent passenger-carrying capacity of three C-141 squadrons to our nation's wartime airlift capabilities. ★

**Lockheed L-1011 TriStar Specifications**

| | -100 | -500 |
|---|---|---|
| Length | 177 ft. 8 in. | 164 ft. 2 in. |
| Wing Span | 155 ft. 4 in. | 164 ft. 4 in. |
| Height | 55 ft. 4 in. | 55 ft. 4 in. |
| Max T/O Wt. | 466,000 lbs. | 496,000 lbs. |
| Max Payload | 84,440 lbs. | 92,270 lbs. |
| Cruise Speed | 520 mph | 520 mph |
| Range (Full pax load) | 3,960 miles | 5,750 miles |

# Excellence In Airmanship

**1st Lt. James T. Cavoto and crew, Det 1, 37 ARRS,** were on a remote operations training flight in the rugged mountains near Fort Huachuca, Arizona. They had flown two high altitude approaches and were conducting a third with the copilot, Lt. Col. Kenneth M. Lewis, at the controls. Their intended landing site was located at 7,140 feet, in a saddle with an extremely steep slope along the approach path, and bounded by 25 to 50-foot trees on three sides. At the far end of the area was another downslope and a fence. Suddenly, on short final, both pilots heard the low-RPM warning horn. They saw the torque at zero and the rotor and power turbine needles split on the dual tachometer, indicating engine failure. The aircraft was approximately 100 feet above and 150 feet out from the site, at 30 to 40 knots when the engine failed.

Lieutenant Cavoto immediately took the controls and checked that the throttle had not been inadvertently rolled back. He then flew the aircraft to the 140-foot square remote pad and used a slight flare to stop the aircraft from going beyond the landing area. Safely over the landing area, he leveled the aircraft, rolled the throttle to flight idle and applied the remaining collective to cushion the landing.

After landing, the flight mechanic, AlC Mark Rohde, exited the aircraft to check for possible fire hazards while the pilots completed the shutdown items. Despite the high density altitude, low airspeed autorotation, the crew prevented major damage to their helicopter and injury to themselves.

The exemplary response to this critical emergency by Lieutenant Cavoto and his crew demonstrated outstanding training, flight preparation and crew coordination. Their actions clearly qualify them for the "Excellence in Airmanship" award. Congratulations from *TMF*.

Top to bottom: 1st Lt. James Cavoto, IP; Lt. Col. Kenneth Lewis, pilot; and A1C Mark Rohde, flight mechanic.

# *TMF* Instrument Quiz

Okay, bright eyes. No approach plate this month. Instead, the fiendish finaglers at your favorite flying safety rag thought an altitude attitude check was in order. So, here is a little quiz to test your knowledge of altimeters, altitudes and attitudes, such as they are. Take the test semi-seriously, and don't peek at AFM 51-37 until you've finished.

1. Refer to the drawing on the right for this and the next two questions. Line A defines _____ altitude.
   a. absolute
   b. pressure
   c. indicated
   d. true

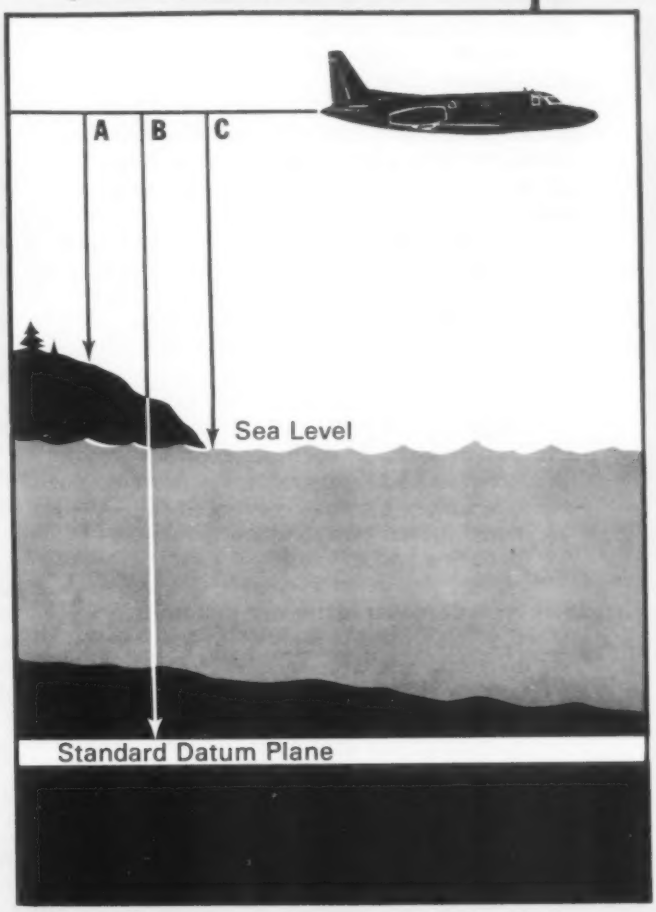
2. Line B defines _____ altitude.
   a. absolute
   b. pressure
   c. indicated
   d. true

3. Line C defines _____ altitude.
   a. absolute
   b. pressure
   c. indicated
   d. true

4. Flying a constant pressure altitude from a cold air mass to a warm air mass, your true altitude will be _____.
   a. higher.
   b. lower.
   c. the same.
   d. there's no correlation.

5. Parked on the ramp at McChord AFB, you set your altimeter to the reported QNH altimeter setting. Your altimeter should read the approximate _____.
   a. pressure altitude.
   b. field elevation.
   c. zero.
   d. density altitude.

6. Parked on the ramp at Hurlburt, you're asked to determine the local QFE altimeter setting. You should _____. (Hint: This is the altimeter setting used in the RAF.)
   a. call the tower for that information.
   b. know that 29.92" Hg is the standard QFE.
   c. set your altimeter to read "zero" (Note the barometric scale reading.)
   d. convert the density altitude to pressure altitude.



7. A QNE altimeter setting _____.
   a. is always 29.92" Hg.
   b. indicates pressure altitude.
   c. indicates density altitude.
   d. both a and b.

8. Due to a malfunction of cabin pressurization leaking into the aircraft's pitot static system, you'd expect to be flying _____.
   a. lower and slower than indicated.
   b. higher and faster than indicated.
   c. higher and slower than indicated.
   d. lower and faster than indicated.

9. You have your electronic altimeter operating in conjunction with mode C of the transponder. Suddenly, without any warning, the altimeter reverts to a barometric operation, and you're unable to reset. Is the altitude readout capability inoperative?
   a. yes
   b. no

10. You're flying an indicated altitude of 10,000 feet with an altimeter setting of 30.30" Hg. At what pressure altitude are you flying?
   a. 10,000 feet.
   b. 10,380 feet.
   c. 9,620 feet.
   d. 9,380 feet.

11. Density altitude is _____.
   a. pressure altitude corrected for nonstandard temperature.
   b. true altitude corrected for nonstandard temperature.
   c. absolute altitude corrected for nonstandard temperature.
   d. both a and c.

12. A radio/radar altimeter indicates _____.
   a. absolute altitude.
   b. true altitude.
   c. indicated altitude.
   d. none of the above.

—Adapted from *Professional Pilot*

## The Answers

**1. (a)** Absolute altitude is the height of the aircraft above the surface.
**2. (b)** Pressure altitude is the altitude above the standard datum plane.
**3. (d)** True altitude is the actual height above mean sea level.
**4. (a)** Pressure altitude is equal to true altitude only when standard atmospheric conditions exist. Flying from cold to warm means the standard datum plane rises toward, or perhaps even above sea level. Thus, your true altitude is higher.
**5. (b)** The standard QNH altimeter setting is obtained by measuring the existing surface pressure and converting it to a pressure that would theoretically exist at sea level at that point, i.e., field elevation.
**6. (c)** A QFE altimeter setting is the actual surface pressure and isn't corrected for sea level. An altimeter set with the local QFE will indicate "zero" feet regardless of field elevation.
**7. (d)** The QNE altimeter setting is always 29.92" Hg and results in the altimeter indicating height above the standard datum plane, or pressure altitude.
**8. (b)** Since cabin altitude would generally be below ambient altitude, the static system measures a higher pressure because of the leakage. Consequently, the IAS and altitude indications would be less than actual.
**9. (b)** Neither a barometric operation nor changing the altimeter setting has any effect on ATC's altitude readout. The altimeter always supplies altitude codes based on 29.92" Hg, regardless of the altimeter's barometric setting.
**10. (c)** Assuming your altimeter was accurate, an altimeter setting of 29.92" Hg would give you an indicated altitude of 9,620 feet. This is the pressure altitude.
**11. (a)** Density altitude is a function of the temperature as it is related to pressure altitude.
**12. (a)** A radio/radar altimeter indicates height above the surface, i.e., absolute altitude.

# Aerial Navigation—Then and Now

## We've come a long way.

by Frank Kingston Smith

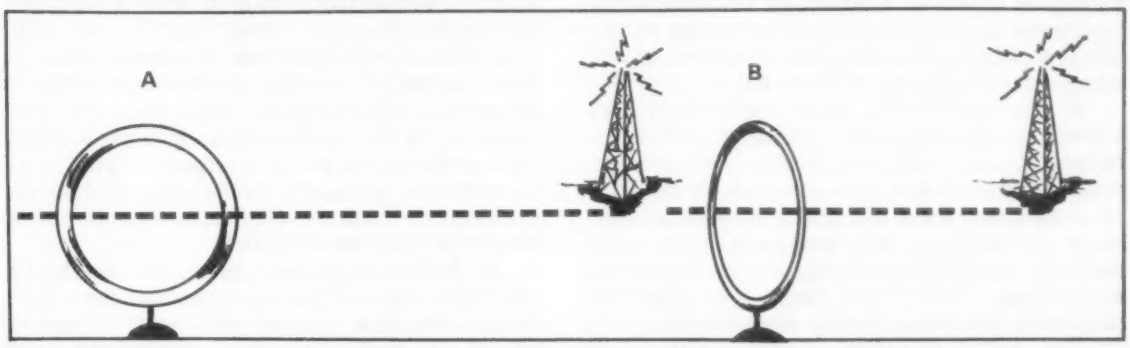
Navigation—the very term usually elicits the image of someone peering through a sextant. Although thousands of airplanes shuttle between communities in the U.S. every day, few non-flyers have any idea about how airplanes navigated from one place to another during the early days of flight.

Airplanes were once navigated entirely by picking one's way over the terrain, proceeding from one clearly identified landmark to another. Perhaps the first example of intentional flight from one point to another was Louis Bleriot's flight across the English Channel in July 1909. It took 36½ minutes for that 23-mile trip. Bleriot took off from Calais and kept his eyes riveted on the white cliffs of Dover, which loomed on the rim of the western horizon. That was short range visual navigation; Bleriot's airplane had no compass.

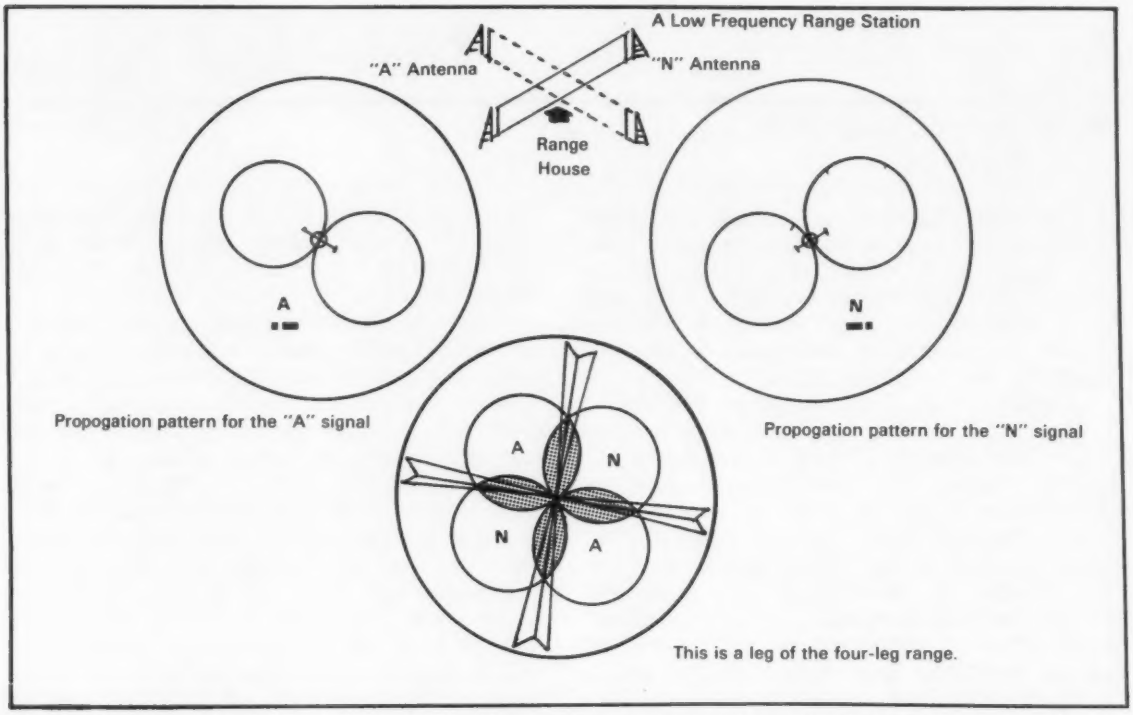
In 1911, only eight years after the Wright Brothers' first flight at Kitty Hawk, Lincoln Beachey flew a rickety, box kite-like biplane from New York to Philadelphia, covering the 90 miles in 2 hours 22 minutes. Because he sat out in the open, he couldn't use a chart, nor did he have a compass. His navigation "aid" was inter-city railroad right-of-ways, which were soon to be known to all aviators as the "Iron Compass." Within months, the pilot of a Wright Model Ex made an even more dramatic flight. Calbraith P. Rodgers flew across the U.S. in a winding course, following railroad tracks all the way. You see, his flight was followed by a supply and support train, so it was necessary for the epic flight to stay near the railway.

After World War I, pilots of open cockpit airplanes with magnetic compasses began to use a new form of direct point-to-point cross-country navigation: "dead reckoning," a corruption of the word "deduced." Dead reckoning was first used by sailors operating out of the sight of land. On a ship moving at relatively slow speeds, dead reckoning is leisurely compared with a 100 mph airplane. But it is a valid form of aerial navigation: Charles A. Lindbergh dead reckoned his way for over 33 hours from New York to Paris and a few months later for 27 hours from Washington, D.C. to Mexico City, those flights taking place mostly in bad weather and at night. During World War II, navigators used dead reckoning to lead aircraft flights for hundreds of miles across hostile territory because all ground-based radio stations were shut down as a precaution against their use by the enemy.

Radio navigation was introduced in the late 1920s, primarily for the use of the then-new passenger carrying airlines flying at speeds of nearly 100 miles per hour in Fokker, Stinson, and Ford Tri-Motor aircraft. Pilots of those early airliners flew in poor visual conditions picking their way across the countryside by a combination of pilotage and dead reckoning,




The rotatable RDF loop antenna produced the strongest signal when the loop was parallel to the radio signal, and its weakest when set at right angles to the transmitter. For navigational use, the weakest aural signal was the most accurate for determining a line of position.




When the simultaneous signals from the "A" and "N" antennas overlap, as in the shaded areas, the pilot hears a steady "hum" from the overlapping Morse code signals.

just as the barnstormers and early open-cockpit airmail pilots had done. By this time, though, instrumentation for flying in clouds had been developed, and airline pilots could climb through an overcast, fly "on top" to their dead-reckoned destination, then descend through the undercast. When they broke out, they hoped something would look familiar so they could complete the flight by old-fashioned pilotage. The thought of flying on airways in clouds without an air traffic control clearance makes modern pilots shudder at the inflight collision hazard, but there were not many airplanes flying in those days.

In the mid-1930s, radio technology had advanced; all types of receivers had been reduced in size and complexity, and aircraft radio equipment had been created. It weighed 75 pounds and took the space of a couple of large suitcases, so only large airplanes could carry it. But it immediately changed aviation navigation. The first giant step was the rotatable, direction-finding loop antenna.

The radio direction finder (RDF) was adapted from ship navigation. By changing audible radio signal volume while rotating the loop antenna (when the radio was tuned into a low frequency station), a pilot/navigator could establish a line of position. However, the RDF system had a serious ambiguity problem: since the navigator did not immediately know whether he was tracking toward or away from the transmitter, it was possible to overfly a ground station and not know it. Nevertheless, this crude and clumsy loop antenna was in airline and military use until the late 1940s, when it was supplanted by a new device: the automatic direction finder (ADF). An ADF dial, with a center-pivoted needle mounted on the instrument panel, provided immediate directional information. When the radio was tuned in to the nondirectional radio beacon, the needle would swing and point directly at the station. The ADF is still widely used today, not only to tune in NDBs, but commercial broadcast stations as well.

As faster airplanes came into use during the 1930s, the ADF was not precise enough to define the new system of aerial highways known as civil airways. To provide the requisite accuracy and safety, radio engineers created a new, low frequency, radio range

system. The heart of the airways system was a horizontal antenna that emitted a signal in the shape of a figure "8" perpendicular to the antenna wire, or aerial. By siting two crossing antennas, the edges of the dual figure 8 signals could be overlapped. Then, if one antenna emitted the Morse Code letter "A" (·–) and the other emitted the letter "N" (–·) the area of overlap would transmit both signals, which merged into a steady hum that was heard over the pilot's headphones. This "aural" signal was called "radio beam," and a pilot flying on-course was "on the beam." By locating a series of aural ranges along the airways with the beams pointing at each other, radio beams led airplanes over the charted routes shown on air navigation charts. For the first time, it was possible for pilots to fly on schedule when the weather was too poor for visual flight, or pilotage. Not only were pilots able to climb and descend through clouds, but they were able to fly through them continuously, staying on airways by riding the invisible beam.

In actual operations, though, low frequency amplitude modulation (AM) radios had a serious shortcoming—static. Aeronautical navigation and communication transmissions were disrupted by thunderstorm activity which created crashing static and made the ADF needle whirl wildly as it pointed at every lightning bolt within range. Eventually, that problem, too, was solved.

Early in World War II, the Allies discovered how to use previously unavailable parts of the radio spectrum in the very high frequency (VHF) and ultra high frequency (UHF) bands. With that, electronics experts discovered the unique property of both VHF and UHF: radio reception was not affected by thunderstorm activity. A pilot could communicate without static interference, even when surrounded by lightning bolts. Furthermore, frequencies could be selected by the use of crystals in both transmitter and receiving sets. The only shortcoming was that, unlike the long-range, ground hugging signals of low frequency ground stations, VHF/UHF radio signals traveled in direct "line-of-sight" from the ground station to the aircraft. At approximately 500 feet AGL, VHF/UHF range was only 30 miles, but it increased with altitude. An aircraft at 12,500 feet AGL, for instance, could receive a signal from 150 miles.

Another World War II top secret was that VHF/UHF radio signals were used for special navigation services. Army pilots who operated from and returned to fixed air bases could dead reckon both outbound and inbound courses. Naval aviators had a more difficult problem. They launched from aircraft carriers that could move 60 or 70 nautical miles in any direction from the launching point. Low on fuel and physically tired, pilots had a serious operational problem—finding their carriers after a three or four-hour sortie.

Electronics specialists developed a device that was mounted on carriers to radiate 360 separate VHF/UHF radio beams, one for each degree of the magnetic compass and always aligned with magnetic north. When within line-of-sight range, airborne equipment (detectors) in returning aircraft could select and isolate any one of those 360 radiated beams, called "radials," and indicate on the instrument panel *(a)* the magnetic course toward the ship, *(b)* whether the airplane was flying to or from the ship, and *(c)* the distance to the carrier deck in nautical miles.

When the war ended, this equipment became the cornerstone of our modern airways system. The military retained the UHF part of the radio spectrum and the VHF segment was allocated to civil aviation. Within a few years, the old, four-leg, low frequency, aural radio range airways structure was replaced almost entirely by the new technology.

Because the new ground-based stations on which the system was constructed operated in the VHF spectrum and were omnidirectional (in that they covered 360 degrees, rather than having only four legs) they were called "VHF *O*mnidirectional *R*adio *R*anges," abbreviated as "VORs," but many pilots referred to them simply as "omniranges," or "omnis." The lines connecting the stations of the new civil airways, were called *victor* airways and numbered on the charts as V-1, etc. Today, there are hundreds of *victor* airways crisscrossing the U.S.

The VOR system made accurate, safe and economical navigation possible for all aircraft operators, and is the reason for the enormous growth in flying for business and pleasure. As technology moves ahead in giant strides, new and better air navigation systems will evolve, but flying and navigating are still done today by the combination of methods developed since 17 December 1903!

—Reprinted from National Air and Space Museum's *Air & Space*

# Deja Vu

## Alice Springs, Australia

**(elevation: 1789 feet)**

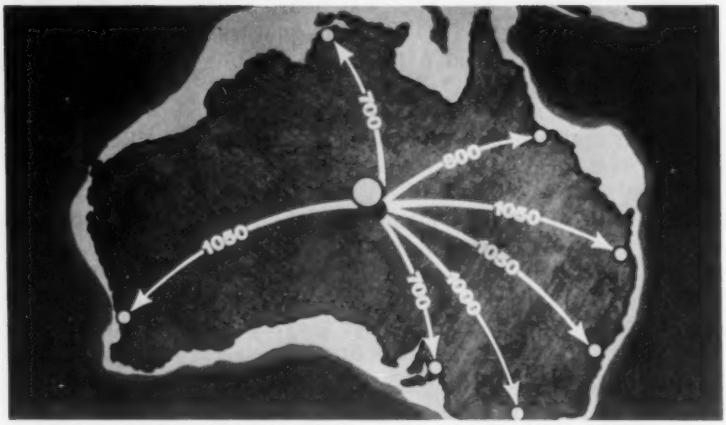
The "town called Alice" lies almost in the dead center of the "down under" continent, with most major airfields at least 700 miles away! There are, however, two smaller landing strips closer. Tennant Creek, 250 miles north, and Mount Isa 365 miles north.

The two highest terrain features within 25 nautical miles are 3,161 feet and 3,145 feet MSL, located northwest of Alice Springs. The short runways, 17/35 and 06/24 are *not* maintained, and are used exclusively by light aircraft. Only the hardstands next to the tower are stressed specifically for large or heavy aircraft. The floodlight poles standing near the edge of the ramp could present a hazard.

Runway 12 is a precision runway, 8,000 feet long and 150 feet wide. It has the British Calvert approach lighting system, Australian T-VASIs, and runway edge lights. You must exit via the midfield taxiway. Runway 30 is a nonprecision runway, and is equipped with Australian T-VASIs and runway lights.

If you observe any changes which need to be included in the Airport Qualification Program, be sure to contact HQ MAC/DOT as soon as possible.

—Adapted from ISD-QT-841 (Alice Springs)



As you can see, Alice Springs is a long way from most suitable alternates.

Two-mile final to runway 12. Light aircraft use the runways in the foreground.

On a one-mile final to runway 30. Notice the displaced, unpaved threshold.

# C.R. TERROR

**The Terrorific Titan takes a tree-strike lying down.**

Egads, Sammy m'lad. I am *tired!*" The Titan of Turboprops rubbed his baby-soft hands over his coarse, 50-grit, 24-hour stubble. The sound was reminiscent of a hacksaw grating through stainless steel. "Ouch! Besides, I could use some hot water for a shave." C.R. continued his run-down of items not quite right with his crew's latest "choice" for an RON. "Nowhere to sleep, nothing to eat but C-rations, no 'Red Crab' seafood emporiums, and no McMac o'club bar! Criminently, Sam! This is tantamount to the stone age. I can't stand one more night of sleeping in the 'Herky Hilton.'"

"Cheer up, Boss," offered the competent copilot, always trying to find the pony in the pile of manure. "It could have been worse, you know. Much worse!"

"Yeah, Boss. Thanks to your skillful handling of the plane after hitting that moose with our number-four engine, we're all alive to tell the story," chipped in Blinky, C.R.'s nav, tactfully leaving out the fact that the moose was stuffed, mounted on a flatbed truck and travelling at 70 mph on the interstate at the time.

"Maybe you two are right," C.R. perked up a little. "I mean, it's not like I *planned* this small expedition here at...where are we again, Blinky?"

"Lost Mountain deserted Army-Air Corps Airfield, North Dakota, 275¼ nautical miles from anywhere remotely civilized, and right smack in the middle of nowhere!"

"Besides, Boss," chimed in Max, the flight engineer, "Twenty-Second Air Force said a plane would be here today bringing in the maintenance guys to fix the airplane, and giving us a ride home."

"Well, they can't accuse me of saving this write-up for Nellis, can they?"

"Oh, you mean like the time you wouldn't put the aft cargo door light on a red X until we arrived in Bangkok?" asked Ty Downs.

C.R. glowered menacingly. *"As I was saying,* what time is our angel of mercy due to arrive, Sam?"

"In about an hour, Boss," replied Sam.

"Gadzooks, lads," boomed the Rhinestone Flyboy, "time's awastin'. Let's grab our bags and be ready for them when they arrive."

C.R. instantly became a blur of motion as he ran to the plane and started picking up "their" bags. Of course, his baby-blue B-4 and custom-made hang-up bag were first on the manifest. After moving them to a suitable location where the rescuing Herk was to park, the Mental Midget collapsed in a heap, exhausted from moving the ultra-heavy-weight luggage. "Whew, and double whew. I gotta learn to pack lighter." With that, he calmly lit a gold-ringed Egyptian Oval and stuffed it into the ebony cigarette holder. "I'm afraid you gentlemen will have to continue without the services of your fearless leader," he said, blowing five interlocking rings. "I'm afraid the northern heat has gotten the best of me for a time." Sammy, Blinky, Max and Ty all sighed, then began to move their bags toward the parking apron.

A short time later, the crew heard the faint but familiar drone of four Allison engines. Sammy walked over to the slumbering form that was his mentor and shook him gently, trying to awake the Somnambulistic Skipper.

"Uh, Boss? Boss? The plane's here, Boss," he said quietly.

"What? Who? When? How?" C.R.'s eyelids snapped open violently, instantly letting in the bright noonday sun. "Man your battle stations! Right full rudder! Anchors aweigh! Huh? Oh, yes, Sam. Uh, good thinking."

"The rest of us are going to block him in, Boss. You want to give us a hand?" asked Blinky.

"Appears not today, Blinky old bean," replied the Fibbing Fumbler. "Looks like I fell asleep on my arm and it's 'asleep.' Can't move it too much, ya know, the tingling gets awful painful."

Sammy and Max breathed a sigh of reluctant relief, knowing all too well how "competent" C.R. was at marshalling other aircraft.

After swiftly unloading the maintainers and their equipment, including a new prop and engine, the crew of the rescuing Herk looked eager for a quick departure. The AC, an Adonis-looking, dark-haired young captain, summoned the resting C.R. and his crew for a briefing.

"We're running a bit late, Major, so we'll have to hustle to make an on-time departure," he said. "Since you guys are all crewmembers, just sit back, relax and leave the driving to us."

"Indubitably, young man," intoned the Rotund One. "You need say no more."

"Uh, just one thing," Sammy interrupted. "You'll need to watch yourself taxiing out.

Those trees over there next to the taxiway look further away than they really are," he started. "I'd suggest you back-taxi down the runway for take...."

"Thanks for your help, *lieutenant*, but we *know* what we're doing. Now, all aboard. I'm not about to ruin my perfect record with an enroute departure delay out of this dump," the young Herk-driver said, cutting off Sam in mid-warning.

"But those trees are closer to the taxiway than they look," Sam tried one more time. But the rest of the crew, equally slim, dark-haired and dashing, were already on board and the loadmaster was pulling out his headset in preparation for engine-start.
ful, Sam," Blinky said. "They didn't look at all concerned by those warnings we got on this place from the Army."

"Come on you two," cried out C.R., waving his two junior officers toward the waiting C-130. "Time's awastin'."

As the Lockheed Legend lumbered away from parking, it made a sudden right-hand turn and started to taxi on the old macadam taxiway. Sammy turned around and looked out the porthole behind his seat. His eyes grew wide as he saw the Herk's left wing tip pass directly over the tops of several small pine trees with much bigger ones coming up fast. He grabbed the loadmaster in one last attempt to stop the aircraft.

"I'm sorry, sir," yelled the loadmaster over the din of the Herk's engines. "The crew is right in the middle of running the before-takeoff checklist and the pilot is briefing the departure. There are some large hills to the north, you know."

"There isn't going to be a takeoff if he scrapes a wing tip on a pine tree," Sam insisted. Meanwhile, C.R. had fallen back into yet another deep slumber, his frame drooped comfortably over three troop seats.

"Sorry, sir, but the AC hates to be interrupted when he's briefing the..."

*Scrrrraappe! Crack, snap and shudder!* Both Sam and the Herk's loadmaster instantly turned to the nearest window. To their horror, they noticed the wing tip had hit several taller pines and snapped them off. The loadmaster quickly broke in on the briefing, and the AC reacted by hitting the brakes abruptly. Sam and the load, who were the only ones standing up, grabbed the seat bar and barely managed to keep from being thrown to the floor. Blinky, Max and Ty, strapped into their seats, were thrown sideways, but were otherwise unhurt.

C.R., on the other hand, hadn't been strapped in at all, and was propelled across the troop seats, sliding along almost the entire length of the cargo compartment, and ending up in a heap on the floor just short of the crew entrance door.

"Yeowch! What happened?" he cried, awakened unexpectedly for the second time that day. Sam and the loadmaster ran to C.R. and helped him to his feet and then back onto the troop seats. The young AC then came down the flight deck steps to check on things in the back as the C-130's engines wound down slowly.

"Is anybody hurt back here?" he asked timidly, his face flushed from embarrassment.

"Just my head, m'lad," replied the Hurt Honcho, "and maybe your pride."

# Quick Stoppers

## Tainted Tasties

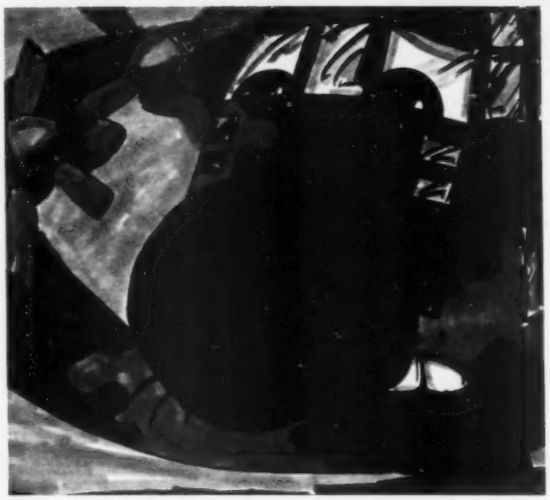
Food poisoning among passengers and crewmembers may be more common than we think. Officials recently reported about 100 passengers and crewmembers suffered varying degrees of salmonella food poisoning after eating hors d'oeuvres served on 13 international flights last March. Most of the victims became ill within 24 to 72 hours, but some experienced symptoms as early as *six hours* after eating the snacks. Fifty cases occured among crewmembers although there were no reports of inflight incapacitation. The source of the contamination was traced to a food powder additive used by a local caterer.

No hors d'oeuvres on your MAC aircraft? Well, in a separate incident, 144 out of 344 passengers became ill on a flight from Anchorage to Copenhagen. Fortunately, the crew had already eaten prior to the flight and therefore avoided the food poisoning. The food was contaminated by a cook in Anchorage who had two fingers infected with staphylococcal bacteria.

MAC's track record in this area has been excellent, but an occasional review of the regs governing meal consumption inflight may be in order to keep the streak going.

## Inflight Bridge Building

The C-141B had been airborne for an hour on an airevac flight when the loadmaster began to detect strange fumes in the cargo compartment. All crewmembers, passengers and patients went on oxygen as the search began for the source. A quick inspection revealed the culprit was "acrylic solvent" brought aboard in a suitcase belonging to one of the duty pax. The substance, used in making and repairing dentures, was further identified by the dental clinic as "acrylic monomer" which is highly flammable and only available by prescription. Once the crew isolated the bottle in a plastic bag, the fumes dissipated and the flight continued normally.



## Damaged Herk Tip

After landing at a Norwegian air base, the non-USAF C-130 followed the marshallers' truck to a hard stand. The crew was directed along the side of the hard stand by a local marshaller, and some personnel from the Herk's own air force indicated that the aircraft was indeed clear of any obstacles—that the ground personnel could see, that is. The copilot and navigator also reported that everything was clear on the right side.

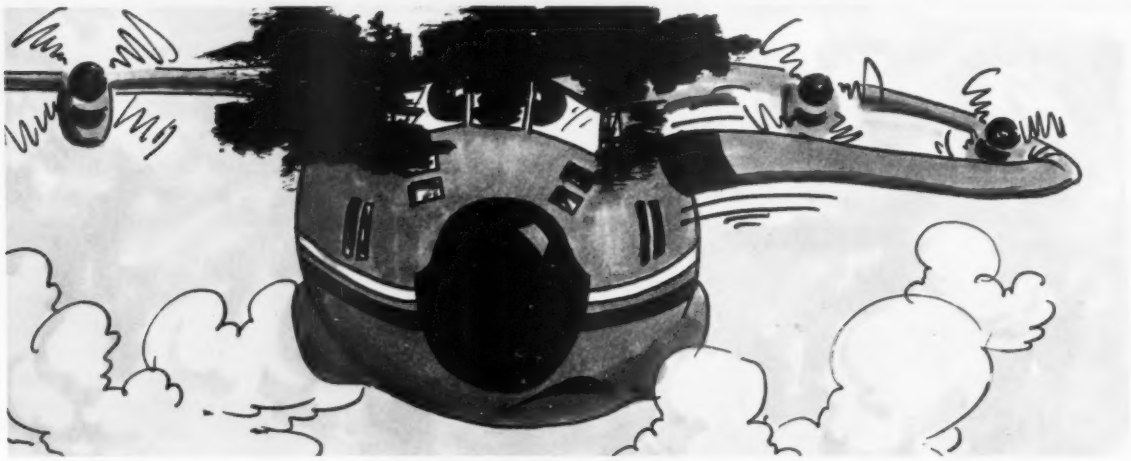
Taxiing very slowly, the pilot had just started a left turn when one of the ground personnel tried to get the Herk to halt. The nav tried to relay this message to the pilot, but he was too late and, alas, the right wing struck a light pole 12 inches inboard from the wing tip.

Why hadn't the crew seen the light pole? Camouflage, m'lad. Camouflage. Seems this base had just completed a program to make the installation less noticeable from the air, and all the poles, along with various and other sundry structures, had been painted to blend in with the local surroundings. Because of this, the light pole *was* difficult to see. *Too* difficult for safety's sake. But worry not. This airfield has just recently decamouflaged the poles and painted them a very bright, much-easier-to-spot yellow!.

## When in Doubt

During the sixth approach of a local training mission, a C-5 crew was surprised to see the leading-edge slat brake-on light illuminate as they extended the flaps and slats. The pilots noted the slats indicated in transit and the scanner confirmed the partial slat extension with damage to the number-two moving island. After completing the appropriate emergency procedures, the crew made an uneventful landing. The maintenance investigation revealed a recent removal and replacement of the now-damaged moving island. During replacement, the island had been shimmed to create a smooth aerodynamic surface IAW prescribed tech data. But with the added width of the shim washers, the original installation bolts were now too short. The tech data neglected to address this problem, so nobody noticed the need for longer bolts. During the flight, one of the bolts pulled loose, allowing a corner of the island to be lifted by the slipstream. As the slats extended, the number-two slat caught the raised corner of the island, shearing the upper section from its mount and hinge.

Total cost of the oversight exceeded $47,000.



## NESA Windshield Fire

The non-USAF Herk crew had just retracted flaps after takeoff when some nasty-looking, eight-to-ten inch flames and dense, acrid black smoke shot out from behind the copilot's instrument panel. The first pilot, who was sitting in the left seat, quickly leveled the C-130 just below a 500-foot overcast deck, and turned downwind for an immediate recovery. Meanwhile, the flight engineer turned off all electrical power to the NESA anti-ice system, suspecting that as the cause, and also pulled the associated circuit breakers. The flames died down, but the nylon instrument panel cover continued to burn. The AC, who was sitting in the right seat, then batted out the rest of the flames with his gloved hands. *(Editors' Note* This particular air force doesn't use nomex flying gloves, but any gloves beat bare hands in this case.) Shortly after all of this had transpired, the loadmaster arrived on the scene with a fire extinguisher—just in case. After a rather uneventful approach and landing, the crew and passengers evacuated without incident.

The moral: No aircraft is so "ultra" safe you shouldn't go without the proper flying clothes.

## Lightning-Struck Starlifter

While performing continuation training at a European airfield, a C-141B was struck by a bolt from the blue—make that gray, as in overcast skies and drizzle. Anyway, the crew of the Starlifter immediately initiated a go-around and started a return to their RON base. Throughout all of this, the radar continued to operate 100 percent normally.

After landing and shutdown, the maintainers took a good look at the Star Lizard to determine the damage. Fortunately, only the radome received the full brunt of the strike, and was summarily removed and replaced.

# After Deadlines

**SHORT BROTHERS C-23 SHERPA ROLLS OUT**—MAC's newest airlifter rolled out during ceremonies in Belfast, Northern Ireland, on 8 August. Acceptance of the Sherpa at the Short Brothers Aerospace complex marks the beginning of the European Distribution System in USAFE. The new aircraft will be used to provide dedicated airlift of critical spare parts for Air Force weapon systems in the European theatre. Short Brothers will eventually deliver 18 of the twin-turboprop light transports to the 10th Military Airlift Squadron at Zweibrucken AB, West Germany. The 10 MAS was reactivated on 15 January, and the initial cadre of squadron members began arriving in June. Sporting a maximum range of approximately 700 nautical miles with a 2,800 pound payload, the C-23 will cruise at about 160 knots. Purchase of the Sherpa also represents the first British-built aircraft to enter service with the USAF since the end of World War II.

**MAC SUPPORTS MINESWEEPING OPERATIONS**—USAF/Lockheed C-5A Galaxies airlifted men, RH-53D minesweeping helicopters, and other support equipment to Europe in a major U.S. effort to aid Egypt and Saudi Arabia in clearing the Red Sea and Suez Canal area of suspected mines. Following an "execute" order by Defense Secretary Caspar Weinberger, about 200 men and the helicopters were flown to Rota, Spain. Once there, the helicopters were reassembled, tested and flown aboard the USS Shreveport amphibious ship, which will act as the support platform for the operation. Also supporting the minesweeping operation was a C-141B carrying support equipment to Jiddah, Saudi Arabia.

**LAPES EXTRACTION RECORD SET**—The Air Force Flight Test Center at Edwards AFB, California, was the scene recently for a test of a new, heavy-equipment extraction system using modified B-52 parachutes. During the test, a new low-level airdrop weight record was set when a 42,000-pound, pallet-mounted load was extracted from an Air Force Systems Command C-130. Don't look for this system to show up in your aircraft very soon, though. Further tests are scheduled both at MCAS Yuma, Arizona, and Edwards before this system is adopted.

**MAC RECEIVES AIR FORCE ASSOCIATION HONOR**—Performance of Military Airlift Command people during the Grenada rescue operation has earned the command AFA's Citation of Honor. AFA's president, David L. Blakenship, explained MAC's selection in a letter of congratulations to Gen. Thomas M. Ryan, Jr., CINCMAC. "This award is being presented in recognition of the sustained and effective performance of all members of the command preceding and during the successful Grenada rescue operations. All of the mission elements of MAC were tasked in this operation. Their overall command performance is recognized and saluted by the entire Air Force Association." General Ryan will accept the award on behalf of the men and women of MAC on 19 September in Washington, D.C.

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# THE MAC Flyer

**SUPERVISING EDITOR VACANCY FOR *The MAC Flyer*—**We have an opening in May-June 1985 for the Supervising Editor of MAC's flight safety journal. We need a newly minted major with MAC flying experience, preferably in strategic airlift. Ambition and the ability to tell a good story are strong qualifications for this position. Flight safety and/or public affairs experience is a plus. Interested officers should contact Major Jim Lee, Supervising Editor, Autovon 638-5542, or write HQ MAC/IGFE, Scott AFB, IL 62225.